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EXAMINER	
ROSARIO-VASQUEZ, DENNIS	
ART UNIT	**PAPER NUMBER**
2621	

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/006,010	WEISMULLER, THOMAS P.	
	Examiner	Art Unit	
	Dennis Rosario-Vasquez	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12/04/01 01/29/02
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Morris et al. (US Patent 5,060,276 A).

Regarding claim 1, Morris et al. discloses a method of determining orientation of an object from a two-dimensional source, said method comprising:

a) providing a plurality of library images (Fig. 1, num. 11:DESIGN DATABASE) each having a predetermined object orientation (Fig. 1, num. 11 provides "the feature orientation for a correctly placed...device (col. 3, lines 32-37)."), each of the plurality of library images (Fig. 1, num. 11:DESIGN DATABASE has reference images as mentioned in col. 3, lines 21-23) having detectable pixels (The reference images are used to locate pixels areas as mentioned in col. 3, lines 41-47.);

b) determining an intensity (Fig. 1, num. 14:NORMALIZATION MODULE determines intensities of "reference vectors" that correspond to reference images from fig. 1, num. 11:DESIGN DATABASE to eliminate "white or almost white spaces" as mentioned in col. 4, lines 52-54 and 60-63.) of said detectable pixels (The reference images are used to locate pixels areas of fig. 1, num. 10 as mentioned in col. 3, lines

41-47.) of each of said library images (Fig. 1, num. 11:DESIGN DATABASE has reference images.);

c) providing an object image (Fig. 1, num. 10:VIDEO IMAGING DEVICE) having detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.);

d) determining an intensity (Fig. 1, num. 12:ADAPTIVE THRESHOLD MODULE transforms a grey level image to a binary image as mentioned in col. 3, lines 41-47.) of said detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) of said object image (Fig. 1, num. 10:VIDEO IMAGING DEVICE) ;

e) comparing (Fig. 1, num. 15:DECISION MODULE includes a comparison as shown in a detail of fig. 1, num. 15 in fig. 2, num. 24:COMPARE) said intensity (Fig. 1, num. 14:NORMALIZATION MODULE determines intensities of "reference vectors" that correspond to reference images from fig. 1, num. 11:DESIGN DATABASE to eliminate "white or almost white spaces" as mentioned in col. 4, lines 52-54 and 60-63.) of said detectable pixels (The reference images are used to locate pixels areas of fig. 1, num. 10 as mentioned in col. 3, lines 41-47.) of each of said library images (Fig. 1, num. 11:DESIGN DATABASE) to said intensity (Fig. 1, num. 12:ADAPTIVE THRESHOLD MODULE) of said detectable pixels ("picture signals" for each frame.) of said object images (Fig. 1, num. 10:VIDEO IMAGING DEVICE) to determine a match score ("computing a similarity measure" in col. 5, line 14) for each of said library (A similarity

measure is computed for reference images from fig. 1, num. 11:DESIGN DATABASE as mentioned in col. 7, lines 66-68.);

f) selecting (Reference images "u" or "d" from fig. 1, num. 11:DESIGN DATABASE are selected based on a threshold λ as shown by three equations from col. 5, line 68 to col. 6, line 4.) said library Fig. 1, num. 11:DESIGN DATABASE.) having (The reference images selected based on the threshold λ is the "maximum probability of correct determination of orientation (col. 5, lines 60-62).") the highest match score ("computing a similarity measure" in col. 5, line 14 corresponds to orientation as mentioned in col. 5, lines 8-17.); and

g) outputting (up and down orientations are outputted in the equations from col. 5, line 68 to col. 6, line 4.) said predetermined object orientation (up and down orientations) corresponding (The above equations use reference images "u" and "d" that correspond to library images from fig. 1, num. 11:DESIGN DATABASE) to said library image (Fig. 1, num. 11:DESIGN DATABASE.) having said highest match score (The reference images selected based on the threshold λ is the "maximum probability of correct determination of orientation (col. 5, lines 60-62).").

Regarding claim 8, Morris et al discloses the method according to claim 1 wherein said step of comparing (Fig. 1, num. 15:DECISION MODULE) said intensity(Fig. 1, num. 14:NORMALIZATION MODULE determines intensities of "reference vectors" that correspond to reference images from fig. 1, num. 11:DESIGN DATABASE to eliminate "white or almost white spaces" as mentioned in col. 4, lines 52-54 and 60-63.) of said detectable pixels (The reference images are used to locate pixels areas of fig. 1, num. 10 as mentioned in col. 3, lines 41-47.) of each of said library images (Fig. 1, num. 11:DESIGN DATABASE) to said intensity (Fig. 1, num. 12:ADAPTIVE THRESHOLD MODULE transforms a grey level image to a binary image as mentioned in col. 3, lines 41-47.) of said detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) of said object images (Fig. 1, num. 10:VIDEO IMAGING DEVICE) to determine a match score ("similarity measure" is determined between bitmaps of a captured image and a reference image as mentioned in col. 5, lines 14-16.) for each of said library images (Fig. 1, num. 11:DESIGN DATABASE.) is accomplished using a Boolean bitwise logical comparison method (The equations from col. 5, line 68 to col. 6, line 4 use the above mentioned bitmaps for comparison using a logical "if" statement.).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2,9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent 5,060,276 A) in view of Zhou et al. (US Patent 6,327,388 B1).

Regarding claim 2, Morris et al. teaches the method according to Claim 1, further comprising:

a) calculating the number ("200-by-130 pixels" from a reference image of database 11 are calculated for finding a particular area from an image from fig. 1, num. 10 in col. 3, lines 41-46) of said detectable pixels (The reference images are used to locate pixels areas as mentioned in col. 3, lines 41-47.) of each of said library images images (Fig. 1, num. 11:DESIGN DATABASE);

b) calculating the number (A number of pixels of an the input image, "256-by-256 pixels", from fig.1, num. 10 is reduced in size,"200-by-130 pixels", using a reference image from fig. 1, num. 11 as mentioned in col. 3, lines 41-47.) of said detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) of said object image (Fig. 1, num. 10:VIDEO IMAGING DEVICE); and

c) resizing (Fig. 1, num. 14:NORMALIZED MODULE) said object image (Fig. 1, num. 10:VIDEO IMAGING DEVICE)

Morris et al. does not teach the remaining limitations, but does suggest outputting a ratio of vote scores from fig. 1, num. 15 as mentioned in col. 8, lines 13-16.

However, Zhou et al. does teach claim 2:

resizing ("scaled uniformly" in col. 5, line 5 and shown in fig .4:SCALE and fig. 1, num. 34:Align and Scale Module) by the ratio of the square root of the quotient ("square root of the ratio" in col. 5, lines 10,11 is one of the criteria used for scaling as mentioned in col. 5, lines 5-11.) of a number of detectable pixels (A ratio of a number of pixels is determined for the above criteria as mentioned in col. 5, lines 10,11.) of one of images (A number of pixels are determined for two images or "components" as mentioned in col. 5, lines 6,7 to calculate the above ratio.) from a library of images (Fig. 4:Logo 1 is one of the two images from a database in fig. 1, num. 30) and a number of said detectable pixels of an object image(Fig. 4:Document Region).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Morris et al. suggestion of a ratio of scores with Zhou et al.'s teaching of a ratio at step 34 of fig .1 using a number of pixels to generate a score at step 38 of fig. 1, because Zhou et al.'s scaling using a ratio of pixel numbers allows to size one object relative to another for printing. Thus, a document can be printed with text of proper size.

Claim 9 was addressed in claims 1 and 2.

Claim 15 was addressed in claim 8.

5. Claim 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent 5,060,276 A) in view of Zlotnick (US Patent 6,778,703 B1).

Regarding claim 3, Morris does not teach the limitations of claim 3, but does suggest outputting data based on a "stop setting" using correctly oriented images from fig.1, num.11: DESIGN DATABASE and a comparator 24 of fig. 2 that outputs multiple signals as mentioned from col. 7, line 66 to col. 8, line 3 for determining an orientation of an object.

Zlotnick teaches a method wherein determining an intensity ("gray level image data" in col. 3, line 30) of detectable pixels ("gray levels of p[i]xel or picture elements" in col. 4, lines 28-30) of each of a plurality of library images (fig. 1, num. 29:REF. IMAGE MEMORY contains binarized reference data as mentioned in col. 3, line 37.) includes setting said intensity ("gray level image data" in col. 3, line 30) of each of said detectable pixels ("gray levels of p[i]xel or picture elements" in col. 4, lines 28-30) to a binary one if said intensity of said detectable pixel is greater than a predetermined value (E_{th} is a threshold for binarizing the reference grey level data as mentioned in col. 4, lines 28-31 and 43-46.)

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Morris et al. suggestion of using correctly oriented images with a comparator with a setting that outputs a stop signal with Sugita et al.'s teaching of using a reference image with a binarizing circuit with a threshold E_{th}, because Sugita et al.'s teaching "reliably recognizes objects" as mentioned in col. 4, lines 56,67.

Regarding claim 4, Morris et al. discloses the method according to Claim 3 wherein said step of determining an intensity (Fig. 1, num. 12:ADAPTIVE THRESHOLD MODULE transforms a grey level image to a binary image as mentioned in col. 3, lines 41-47.) of said detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) of said object image (Fig. 1, num. 10:VIDEO IMAGING DEVICE) includes setting (Fig. 1, num. 12 uses a threshold) said intensity (Fig. 1, num. 12:ADAPTIVE THRESHOLD MODULE) of each of said detectable pixels (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) to a binary one (Fig. 1, num. 11 transforms each gray level pixel to a binary 1 using the threshold as mentioned in col. 3, lines 47-50.) if said intensity (grey level) of said detectable pixel (Fig. 1, num. 10 inputs "512-by-512 pixel frames" as mentioned in col. 3, lines 25-30.) is greater than a predetermined value (Morris et al. states, "a gray level must...have a mass exceeding the mass threshold(col. 3, line 67 to col. 4, line 1).").

6. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent 5,060,276 A) in view of Zhou et al. (US Patent 6,327,388 B1) further in view of Zlotnick (US Patent 6,778,703 B1).

Claim 10 was addressed in claim 3.

Claim 11 was addressed in claim 4.

7. Claims 5,6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent 5,060,276 A) in view of Avinash (US Patent 6,757,442 B1).

Regarding claim 5, Morris et al. does not teach the limitations of claim 5, but Morris et al. does suggest processing gray scale or intensity values for a corresponding image from a video imaging device in fig. 1,num. 10 and in col. 3, lines 51,52.

However, Avinash does teach the limitation of claim 5 and does process gray scale data or intensity in col. 5, lines 13,14 with a corresponding image (Fig. 20, num. 328) as suggested by Morris et al.

Regarding claim 5, Avinash teaches a method wherein a step of determining an intensity ("CR1*r_{avg}" has an intensity value "r_{avg}".) of detectable pixels of each library image (Fig. 20,num. 336:"rshr-exp" is an image that is used to determine intensity "DR1* r_{avg}".) includes determining an average pixel intensity (An average of an image "sshr" in fig. 20, num. 350 is determined in column 18, second equation down. Note that image "sshr" contains the image "rshr-exp" in fig. 20, num. 336, thus the image "rshr-exp" is averaged, also.) of each of said library images (The image of fig. 20, num. 336.) if said intensity ("CR1*r_{avg}") of said detectable pixel of each of said library image (Fig. 20,num. 336:"rshr-exp" has an intensity equal to CR1*r_{avg}.) is greater than a predetermined value ("CR1* r_{avg}" is greater than the "0" in the equation, rshr-exp-thr=0" shown in col. 17, lines 60,61.)

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Morris et al's teaching of using gray scale values with a corresponding image from fig. 1,num. 10 with Avinash's teaching of using an intensity

value "CR1* r_{avg}" for a corresponding image in fig. 20, num. 336, because Avinash's determination of intensity "CR1* r_{avg}" corresponds to a mask image "rshr-exp-thr" in col. 17, lines 56-58 that can identify features of interest in an image in col. 10, lines 29-34.

Regarding claim 6, Avinash teaches the method according to claim; 5 wherein a step (Fig. 3,num. 56:NON-UNIFORMITY EQUALIZATION) of determining an intensity of detectable pixels (Fig. 3, num. 56 corrects an intensity of pixels of an object image in col. 5, lines 13,14.) of an object image (fig. 17,num. 250:READ INPUT DATA g AND PARAMETERS and fig. 18,num. 270 is the image "g".) includes determining an average pixel intensity (An average of an image "sshr" in fig. 20, num. 350 is determined in column 18, second equation down. Note that image "sshr" contains the image "rshr-exp-thr" in fig. 20, num. 342, thus the image "rshr-exp-thr" is averaged, also. Note that the image "rshr-exp-thr" is derived from image "g" in fig. 18.) of said object image (Fig. 18, num. 270:"g") if said intensity of said detectable pixel (Fig. 3, num. 56 corrects an intensity of pixels of an object image in col. 5, lines 13,14.) of said object image (Fig. 18, num. 270:"g" or g(x,y) in col. 16, line 52) is greater ("feq(x,y)<g(x,y)" in col. 16, line 52) than a predetermined value ("feq(x,y)" in col. 16, line 52 is an image generated in fig. 18,num. 300 to be compared with the image "g" in fig. 18, num. 270.).

Regarding claim 7, Avinash teaches the method according to Claim 6, further comprising;

Rescaling (fig. 20,num. 352:"S sca" is a rescaling operation in col. 18, lines 18-23.) said intensity of said detectable pixels(Fig. 3, num. 56 corrects an intensity of pixels of an object image in col. 5, lines 13,14.) of said object image (fig. 17,num. 250:READ INPUT DATA g AND PARAMETERS and fig. 18,num. 270 is the image "g".) by a ratio ("Ssca" has a ratio as shown in the equation in column 18, second equation down.) of said average pixel intensity(An average of an image "sshr" in fig. 20, num. 350 is determined in column 18, second equation down. Note that image "sshr" contains the image "rshr-exp" in fig. 20, num. 336, thus the image "rshr-exp" is averaged, also.) of said library image (The image of fig. 20, num. 336.) to said average pixel intensity (An average of an image "sshr" in fig. 20, num. 350 is determined in column 18, second equation down. Note that image "sshr" contains the image "rshr-exp-thr" in fig. 20, num. 342, thus the image "rshr-exp-thr" is averaged, also. Note that the image "rshr-exp-thr" is derived from image "g" in fig. 18 which is also shown as "r" in fig. 20,num. 328.) of said object image (Fig. 18, num. 270:"g" or g(x,y) in col. 16, line 52).

8. Claims12, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al. (US Patent 5,060,276 A) in view of Zhou et al. (US Patent 6,327,388 B1) further in view of Avinash (US Patent 6,757,442 B1).

Claim 12 was addressed in claim 5.

Claim 13 was addressed in claim 6.

Claim 14 was addressed in claim 7.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Baker et al. (US Patent 5,815,606 A) is pertinent as teaching a method of computing a score with a scaling factor.

Arnold et al. (US Patent 4,922,915 A) is pertinent as teaching a method of averaging a reference image and a region of interest image as shown in fig. 15c.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario-Vasquez whose telephone number is 703-305-5431. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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